

What is claimed is:

- 1
2
3
4
5
6
7
8
1. A method comprising:
estimating a plurality of interpolated first color values from a
plurality of first color values in a sub-block of image data, wherein the image
data comprises first color values, second color values, and third color values;
deriving a plurality of second color hues using the second color
values and the interpolated first color values; and
estimating a plurality of interpolated second color hues using the
second color hues.
- 1
2
3
2. The method of claim 1, further comprising:
deriving a second plurality of second color values from the plurality
of interpolated second color hues.
- 1
2
3
4
5
6
7
3. The method of claim 1, further comprising:
deriving a plurality of third color hues using the third color values
and the interpolated first color values;
estimating a plurality of interpolated third color hues using the third
color hues; and
deriving a second plurality of third color values from the plurality of
interpolated third color hues.
- 1
2
3
4
4. The method of claim 1, estimating a plurality of interpolated first
color values from a plurality of first color values in a sub-block of image data
further comprising:
identifying four direct neighbors in the sub-block; and

5 using the first color values from the four direct neighbors to
6 estimate an interpolated first color value.

1 5. The method of claim 4, using the first color values from the four
2 direct neighbors to estimate an interpolated first color value further comprising:
3 determining that the sub-block is a smooth zone; and
4 averaging four first color values from the four direct neighbors to
5 produce the interpolated first color value.

1 6. The method of claim 5, determining that the sub-block is a smooth
2 zone further comprising:
3 identifying four first color values for the four direct neighbors; and
4 determining that the four first color values are substantially similar.

1 7. The method of claim 4, using the first color values from the four
2 direct neighbors to estimate an interpolated first color value further comprising:
3 determining that the sub-block is an edge zone; and
4 averaging three of the four direct neighbors whose first color
5 values are similar to produce an edge zone average;
6 multiplying the edge zone average by a predetermined value to
7 produce a result; and
8 averaging the result with the remaining direct neighbor.

1 8. The method of claim 7, determining that the sub-block is an edge
2 zone further comprising:

3 identifying four first color values for the four direct neighbors; and
4 determining that three of the four first color values are substantially
5 similar.

1 9. The method of claim 4, using the first color values from the four
2 direct neighbors to estimate an interpolated first color value further comprising:
3 determining that the sub-block is a stripe zone;
4 averaging the first color values for a first direct neighbor and a
5 second direct neighbor to produce a stripe zone average where the first direct
6 neighbor and the second direct neighbor form a stripe and the first color values
7 for the first direct neighbor and the second direct neighbor are substantially
8 similar;
9 multiplying the stripe zone average by a predetermined value to
10 produce a first partial result;
11 averaging the first color values for the third direct neighbor and the
12 fourth direct neighbor to produce a second partial result;
13 adding the first partial result and the second partial result together
14 to produce a stripe zone result; and
15 dividing the stripe zone result by four.

1 10. The method of claim 9, determining that the sub-block is a stripe
2 zone further comprising:
3 identifying four first color values for the four direct neighbors; and
4 determining that a first pair of the four first color values are
5 substantially similar.

1 11. A system comprising:
2 a color filter array comprising a plurality of first color-filtered pixels,
3 second color-filtered pixels, and third color-filtered pixels, wherein each third
4 color-filtered pixel and each first color-filtered pixel are surrounded on all sides
5 by second color-filtered pixels; and
6 a color interpolation program to receive image data produced by
7 incident light passing through the color filter array and produce interpolated
8 image data.

1 12. The system of claim 11, wherein the image data comprises first
2 color values, second color values, and third color values and the color
3 interpolation program:
4 estimates an interpolated second color value from a plurality of
5 second color values in a sub-block of the image data;
6 derives a plurality of first color hues using the first color values and
7 the interpolated second color values; and
8 estimates a plurality of interpolated first color hues using the first
9 color hues.

1 13. The system of claim 12, wherein the color interpolation program
2 further derives a second plurality of first color values from the plurality of
3 interpolated first color hues.

1 14. The system of claim 13, wherein the color interpolation program
2 further:

3 derives a plurality of third color hues using the third color values
4 and the interpolated second color values;

5 estimates a plurality of interpolated third color hues using the third
6 color hues; and

7 derives a second plurality of third color values from the plurality of
8 interpolated third color hues.

1 15. The system of claim 11, wherein the second color-filtered pixels
2 comprise seventy-five percent of the pixels in the color filter array.

1 16. The system of claim 11, further comprising storage to store the
2 color interpolation program.

1 17. The system of claim 11, wherein the first color-filtered pixel
2 comprises a red-filtered pixel, the second color-filtered pixel comprises a green-
3 filtered pixel, and the third color-filtered pixel comprises a blue-filtered pixel.

1 18. An article comprising a medium storing a software program for
2 enabling a processor-based system to:

3 estimate a plurality of interpolated first color values from a plurality
4 of first color values in a sub-block of image data, wherein the image data
5 comprises first color values, second color values, and third color values;

6 derive a plurality of second color hues using the second color
7 values and the interpolated first color values; and
8 estimate a plurality of interpolated second color hues using the
9 second color hues.

1 19. The article of claim 18, further storing a software program for
2 enabling a processor-based system to:
3 derive a second plurality of second color values from the plurality of
4 interpolated second color hues.

1 20. The article of claim 19, further storing a software program for
2 enabling a processor-based system to:
3 derive a plurality of third color hues using the third color values and
4 the interpolated first color values;
5 estimate a plurality of interpolated third color hues using the third
6 color hues; and
7 derive a second plurality of third color values from the plurality of
8 interpolated third color hues.

1 21. The article of claim 20, further storing a software program for
2 enabling a processor-based system to:
3 identify four direct neighbors in the sub-block; and
4 use first color values from the four direct neighbors to estimate an
5 interpolated first color value.